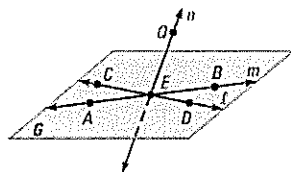


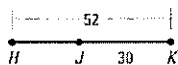
Use the diagram to decide whether the statement is *true* or *false*.

- Point  $A$  lies on line  $m$ .
- Point  $D$  lies on line  $n$ .
- Points  $B$ ,  $C$ ,  $E$ , and  $Q$  are coplanar.
- Points  $C$ ,  $E$ , and  $B$  are collinear.
- Another name for plane  $G$  is plane  $QEC$ .



Find the indicated length.

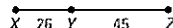
6. Find  $HJ$ .



7. Find  $BC$ .



8. Find  $XZ$ .



In Exercises 9–11, find the distance between the two points.

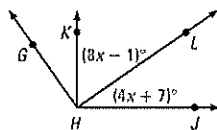
9.  $T(3, 4)$  and  $W(2, 7)$       10.  $C(5, 10)$  and  $D(6, -1)$       11.  $M(-8, 0)$  and  $N(-1, 3)$

12. The midpoint of  $\overline{AB}$  is  $M(9, 7)$ . One endpoint is  $A(3, 9)$ . Find the coordinates of endpoint  $B$ .

13. Line  $t$  bisects  $\overline{CD}$  at point  $M$ ,  $CM = 3x$ , and  $MD = 27$ . Find  $CD$ .

In Exercises 14 and 15, use the diagram.

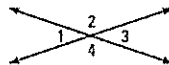
14. Trace the diagram and extend the rays. Use a protractor to measure  $\angle GHJ$ . Classify it as *acute*, *obtuse*, *right*, or *straight*.



15. Given  $m\angle KHJ = 90^\circ$ , find  $m\angle LHJ$ .

16. The measure of  $\angle QRT$  is  $154^\circ$ , and  $\overrightarrow{RS}$  bisects  $\angle QRT$ . What are the measures of  $\angle QRS$  and  $\angle SRT$ ?

In Exercises 17 and 18, use the diagram at the right.



17. Name four linear pairs.

18. Name two pairs of vertical angles.

19. The measure of an angle is  $64^\circ$ . What is the measure of its complement? What is the measure of its supplement?

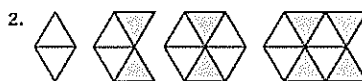
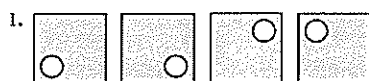
20. A convex polygon has half as many sides as a concave 10-gon. Draw the concave polygon and the convex polygon. Classify the convex polygon by the number of sides it has.

21. Find the perimeter of the regular pentagon shown at the right.



22. **CARPET** You can afford to spend \$300 to carpet a room that is 5.5 yards long and 4.5 yards wide. The cost to purchase and install the carpet you like is \$1.50 per square foot. Can you afford to buy this carpet? *Explain*.

Sketch the next figure in the pattern.



Describe the pattern in the numbers. Write the next number.

3.  $-6, -1, 4, 9, \dots$

4.  $100, -50, 25, -12.5, \dots$

In Exercises 5–8, write the if-then form, the converse, the inverse, and the contrapositive for the given statement.

5. All right angles are congruent.

6. Frogs are amphibians.

7.  $5x + 4 = -6$ , because  $x = -2$ .

8. A regular polygon is equilateral.

9. If you decide to go to the football game, then you will miss band practice. Tonight, you are going the football game. Using the Law of Detachment, what statement can you make?

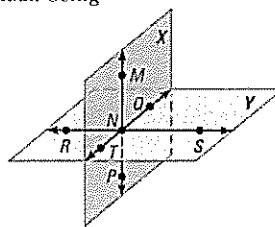
10. If Margot goes to college, then she will major in Chemistry. If Margot majors in Chemistry, then she will need to buy a lab manual. Using the Law of Syllogism, what statement can you make?

Use the diagram to write examples of the stated postulate.

11. A line contains at least two points.

12. A plane contains at least three noncollinear points.

13. If two planes intersect, then their intersection is a line.



Solve the equation. Write a reason for each step.

14.  $9x + 31 = -23$

15.  $-7(-x + 2) = 42$

16.  $26 + 2(3x + 11) = -18x$

In Exercises 17–19, match the statement with the property that it illustrates.

17. If  $\angle RST \cong \angle XYZ$ , then  $\angle XYZ \cong \angle RST$ .

A. Reflexive Property of Congruence

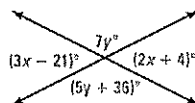
18.  $\overline{PQ} \cong \overline{PQ}$

B. Symmetric Property of Congruence

19. If  $\overline{FG} \cong \overline{JK}$  and  $\overline{JK} \cong \overline{LM}$ , then  $\overline{FG} \cong \overline{LM}$ .

C. Transitive Property of Congruence

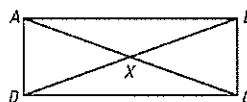
20. Use the Vertical Angles Congruence Theorem to find the measure of each angle in the diagram at the right.



21. Write a two-column proof.

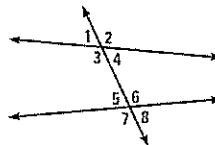
**GIVEN**  $\triangleright \overline{AX} \cong \overline{DX}, \overline{XB} \cong \overline{XC}$

**PROVE**  $\triangleright \overline{AC} \cong \overline{BD}$

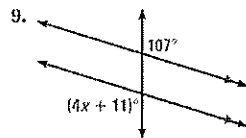
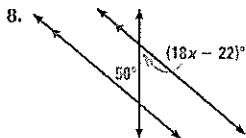
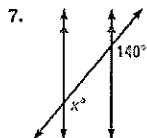


Classify the pairs of angles as *corresponding*, *alternate interior*, *alternate exterior*, or *consecutive interior*.

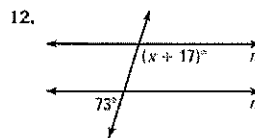
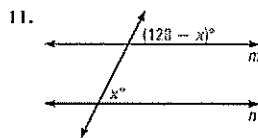
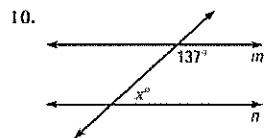
1.  $\angle 1$  and  $\angle 8$
2.  $\angle 2$  and  $\angle 6$
3.  $\angle 3$  and  $\angle 5$
4.  $\angle 4$  and  $\angle 5$
5.  $\angle 3$  and  $\angle 7$
6.  $\angle 3$  and  $\angle 6$



Find the value of  $x$ .



Find the value of  $x$  that makes  $m \parallel n$ .



Find the slope of the line that passes through the points.

13.  $(3, -1), (3, 4)$
14.  $(2, 7), (-1, -3)$
15.  $(0, 5), (-6, 12)$

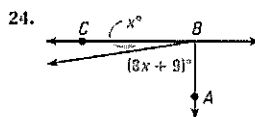
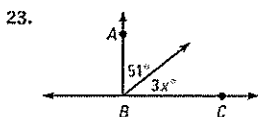
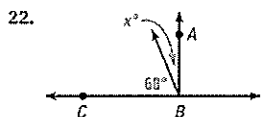
Write an equation of the line that passes through the given point  $P$  and has the given slope  $m$ .

16.  $P(-2, 4), m = 3$
17.  $P(7, 12), m = -0.2$
18.  $P(3, 5), m = -8$

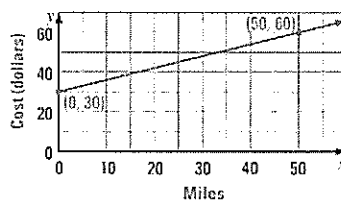
Write an equation of the line that passes through point  $P$  and is perpendicular to the line with the given equation.

19.  $P(1, 3), y = 2x - 1$
20.  $P(0, 2), y = -x + 3$
21.  $P(2, -3), x - y = 4$

In Exercises 22–24,  $\overline{AB} \perp \overline{BC}$ . Find the value of  $x$ .



25. **RENTAL COSTS** The graph at the right models the cost of renting a moving van. Write an equation of the line. Then find the cost of renting the van for a 100 mile trip.

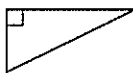


Classify the triangle by its sides and by its angles.

1.



2.

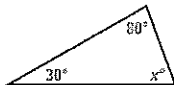


3.

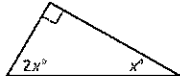


In Exercises 4–6, find the value of  $x$ .

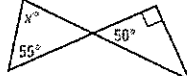
4.



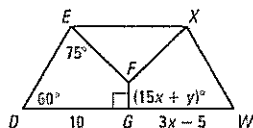
5.



6.

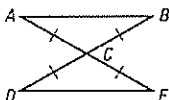


7. In the diagram,  $DEFG \cong WXFG$ .  
Find the values of  $x$  and  $y$ .

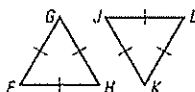


In Exercises 8–10, decide whether the triangles can be proven congruent by the given postulate.

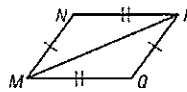
- 8.
- $\triangle ABC \cong \triangle EDC$
- by SAS



- 9.
- $\triangle FGH \cong \triangle JKL$
- by ASA



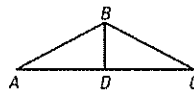
- 10.
- $\triangle MNP \cong \triangle PQM$
- by SSS



11. Write a proof.

**GIVEN**  $\triangle ABC$  is isosceles.  $\overline{BD}$  bisects  $\angle B$ .

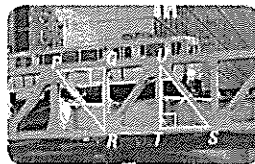
**PROVE**  $\triangle ABD \cong \triangle CBD$



12. What is the third congruence needed to prove that  $\triangle PQR \cong \triangle STU$  using the indicated theorem?

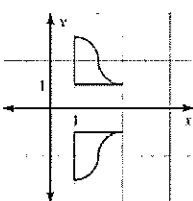
a. HL

b. AAS

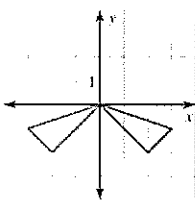


Decide whether the transformation is a *translation*, *reflection*, or *rotation*.

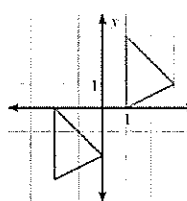
13.



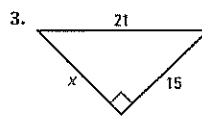
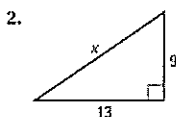
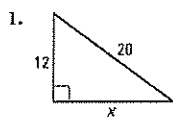
14.



15.



Find the value of  $x$ . Write your answer in simplest radical form.



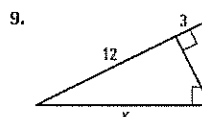
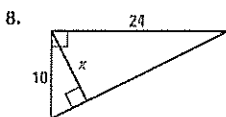
Classify the triangle as *acute*, *right*, or *obtuse*.

4. 5, 15,  $5\sqrt{10}$

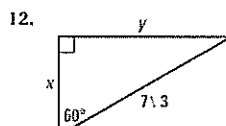
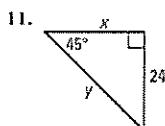
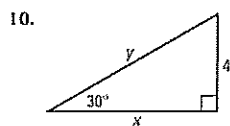
5. 4.3, 6.7, 8.2

6. 5, 7, 8

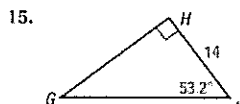
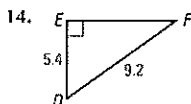
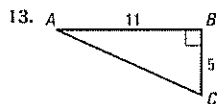
Find the value of  $x$ . Round decimal answers to the nearest tenth.



Find the value of each variable. Write your answer in simplest radical form.



Solve the right triangle. Round decimal answers to the nearest tenth.



16. **FLAGPOLE** Julie is 6 feet tall. If she stands 15 feet from the flagpole and holds a cardboard square, the edges of the square line up with the top and bottom of the flagpole. Approximate the height of the flagpole.

17. **HILLS** The length of a hill in your neighborhood is 2000 feet. The height of the hill is 750 feet. What is the angle of elevation of the hill?

